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**Written Statement
of the
American Dental Hygienists' Association
444 North Michigan Avenue
Chicago, Illinois 60611-3980
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on

**"Ageism in Health Care: Are Our Nation's
Seniors Receiving Proper Oral Health Care?"**

**Forum
of the
Senate Special Committee on Aging**

**Honorable Larry E. Craig, Chairman
Honorable John Breaux, Ranking Member**

September 22, 2003

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Introduction

The American Dental Hygienists' Association (ADHA) appreciates this opportunity to participate in the Senate Special Committee on Aging's forum, entitled "Ageism in Health Care: Are Our Nation's Seniors Receiving Proper Oral Health Care?" As Daniel Perry, Executive Director of the Alliance for Aging Research, has testified before this Committee, "[a]geism is a deep and often unconscious prejudice against the old, an attitude that permeates American culture. It is a particularly apparent and especially damaging frame of mind that surfaces all too often in healthcare settings where older patients predominate."

ADHA applauds the Senate Special Committee on Aging for holding this important forum on the oral health of America's seniors. ADHA is hopeful that henceforth, whenever Senators think of seniors' general health, they will also think of oral health. As the May 2000 *Oral Health in America: A Report of the Surgeon General* has confirmed, oral health is a fundamental part of overall health and general well-being. Further, as our population ages, it is expected that baby boomers will retain more natural teeth than previous seniors. Clearly, the oral health needs of the elderly will only increase in the future.

Probably the primary problem faced by the nation's elderly with respect to their oral health is a lack of access to needed and wanted oral health services. This lack of access is attributable to a number of factors, including lack of awareness of the importance of oral health to overall health and general well-being, inability to travel to reach dental services, scarcity of available dental providers, and lack of ability to pay for dental services (either through dental insurance or out of pocket). ADHA looks forward to working, in a multi-disciplinary way, to address these issues and meet the oral health needs of our nation's seniors. Indeed, ADHA believes that the experience, education and expertise of dental hygienists are now dramatically underutilized and that increased utilization of dental hygienists is an important part of the solution to the crisis in oral health care affecting our nation's seniors.

ADHA is the largest national organization representing the professional interests of the more than 120,000 dental hygienists across the country. Dental hygienists are preventive oral health professionals who are licensed in each of the fifty states. Dental hygienists are oral health educators and clinicians who, in coordination with dentists, provide preventive, educational, and therapeutic services supporting total health for the control of oral diseases and the promotion of oral health.

U.S. Surgeon General's May 2000 Report on Oral Health in America Chronicles the Oral Health of Older Adults

The U.S. Surgeon General issued *Oral Health in America: A Report of the Surgeon General* in May 2000. This landmark report confirms what dental hygienists have long known: that oral health is an integral part of total health and that good oral health can

be achieved. The Surgeon General's Report on Oral Health challenges all of us -- in both the public and private sectors -- to address the compelling evidence that not all Americans have achieved the same level of oral health and well-being. The Report describes a "silent epidemic" of oral disease, which disproportionately affects our most vulnerable citizens -- poor children, the elderly, and many members of racial and ethnic minority groups.

Key findings enumerated in the Report include:

1. Oral diseases and disorders in and of themselves affect health and well-being throughout life.
2. Safe and effective measures exist to prevent the most common dental diseases -- dental caries (tooth decay) and periodontal (gum) diseases.
3. Lifestyle behaviors that affect general health such as tobacco use, excessive alcohol use, and poor dietary choices affect oral and craniofacial health as well.
4. There are profound and consequential oral health disparities within the U.S. population.
5. More information is needed to improve America's oral health and eliminate health disparities.
6. The mouth reflects general health and well-being.
7. Oral diseases and conditions are associated with other health problems.
8. Scientific research is key to further reduction in the burden of diseases and disorders that affect the face, mouth and teeth.

Importantly, the Surgeon General's Report on Oral Health specifically examined the oral health of older adults. Key findings are set forth below:

1. Twenty-three percent of 65-74 year olds have severe periodontal disease (measured as 6 millimeters of periodontal attachment loss). At all ages men are more likely than women to have more severe disease, and at all ages people at the lowest socioeconomic levels have more severe periodontal disease.
2. About 30 percent of adults 65 years and older are edentulous (without natural teeth), compared to 46 percent 20 years ago. These figures are higher for those living in poverty.

3. Oral and pharyngeal cancers are diagnosed in about 30,000 Americans annually; 8,000 die from these diseases each year. These cancers are primarily diagnosed in the elderly. Prognosis is poor. The 5-year survival rate for white patients is 56 percent; for blacks, it is only 34 percent.
4. Most older Americans take both prescription and over-the-counter drugs. In all probability, at least one of the medications used will have an oral side effect—usually dry mouth. The inhibition of salivary flow increases the risk for oral disease because saliva contains antimicrobial components as well as minerals that can help rebuild tooth enamel after attack by acid-producing, decay-causing bacteria. Individuals in long-term care facilities are prescribed an average of eight drugs.
5. At any given time, 5 percent of Americans aged 65 and older (currently some 1.65 million people) are living in a long-term care facility where dental care is problematic.
6. Many elderly individuals lose their dental insurance when they retire. The situation may be worse for older women, who generally have lower incomes and may never have had dental insurance. Medicaid funds dental care for the low-income and disabled elderly in some states, but reimbursements are low. Medicare is not designed to reimburse for routine dental care.

The Oral Health Needs of Seniors in Long-Term Care Facilities Are Not Being Met

While only approximately 5% (1.65 million) of Americans over the age of 65 reside in long term care facilities, these seniors are among those Americans with the most limited access to oral health services. Indeed, between 80% and 96% of Americans over 65 years of age in long term care facilities have unmet oral health needs. Studies of the nursing home population reveal that:

- up to 78% have untreated caries;
- more than 40% have periodontal disease;
- up to 75% of those over 65 have lost some or all of their teeth;
- more than 50% of those over 75 are without teeth (edentulous); and
- 80% of those who are edentulous have dentures, but 18% of those without teeth do not use their dentures.¹

¹ Schwartz, Murray, "Dentistry for the Long Term Care Patient," *Dentistry Today*, Volume 22(1):52-57, January 2003.

A 1995 survey of 16,000 nursing homes found that at least 60% of nursing homes offered no regular dental services on site; dental services were available only through emergency call or off-site. More than 10% of nursing homes offered no oral health care services whatsoever to their residents².

This scarcity of oral health services for our elderly means that our nation's seniors have significant unmet oral health needs. This is problematic for a number of reasons, including:

- Oral health problems can impede speaking, chewing and swallowing, adversely affecting interpersonal relations and proper nutrition. Seniors who can not interact socially become increasingly isolated, which can lead to depression. Seniors who have difficulty with chewing and swallowing find it difficult to maintain a proper diet and to take required medications.
- Research increasingly demonstrates a link between oral health and systemic health. The presence of periodontal disease has been linked to a number of systemic conditions, including coronary heart disease and stroke.
- The Centers for Disease Control (CDC) reports that the mouth can serve as an early warning system, alerting oral health providers of possible trouble in other parts of the body. For example, studies in post-menopausal women suggest that bone loss in the lower jaw may precede the skeletal bone loss seen in osteoporosis.
- Oral health care providers routinely examine patients for oral cancer. The incidence of oral cancer (which includes lip, oral cavity, and pharyngeal cancer) increases with age and is difficult to detect without an oral exam. Persons 65 years of age and older are seven times more likely to be diagnosed with oral cancer than those under age 65. Indeed, more older Americans died from oral cancer than from skin cancer in 1997. Oral cancers result in approximately 8,000 deaths per year, more than half of these deaths are among persons 65 years of age and older.
- Seniors who are edentulous (without natural teeth) and lack well-fitting dentures often suffer from poor self esteem and may have difficulty with such fundamental activities as speaking, chewing, and eating.

Increased Access to Preventive Oral Health Services is Key to Improving the Oral Health of our Nation's Seniors. Additional Entry Points into the Oral Health Care Delivery System are Sorely Needed

Unlike most medical conditions, the three most common oral diseases -- dental caries (tooth decay), gingivitis (gum disease) and periodontitis (advanced gum and bone disease) -- are proven to be preventable with the provision of regular oral health care. Despite this prevention capability, too many of our seniors suffer from preventable

² Gift, H., Cherry-Peppers, G., Oldakowski, R. "Oral Health in U.S. Nursing Homes: 1995," *Special Care in Dentistry*, Volume 18: 226-233, 1998.

dental disease. Clearly, more must be done to increase seniors' access to oral health care services.

While the profession of dental hygiene was founded in 1923 as a school-based profession, today the provision of dental hygiene services is largely tied to the private dental office. Increased utilization of dental hygienists in assisted-living facilities, nursing homes, and other sites -- with appropriate referral mechanisms in place to dentists -- will improve access to needed preventive oral health services. This increased access to preventive oral health services will likely result in decreased oral health care costs per capita and, more important, improvements in oral and total health.

ADHA feels strongly that restrictive dental hygiene supervision laws constitute one of the most significant barriers to oral health care services. Indeed, ADHA is committed to lessening such barriers, which restrict the outreach abilities of dental hygienists and tie oral health care delivery to the fee-for-service private dental office, where only a fraction of the population is served.

Some states *are* pioneering less restrictive supervision and practice setting requirements. These innovations facilitate increased access to oral health services. Maine and New Hampshire, for example, have what is called public health supervision, which is less restrictive than general supervision. Oregon and California have expanded dental hygiene practice through the use of limited access permits and special license designations like the Registered Dental Hygienist in Alternative Practice (RDHAP).

Other states have unsupervised practice, which means that a dental hygienist can initiate treatment based on his or her assessment of patient needs without the specific authorization of a dentist, treat the patient without the presence of a dentist, and maintain a provider-patient relationship without the participation of the patient's dentist of record.

Today, ten states recognize dental hygienists as Medicaid providers of oral health services and provide direct reimbursement for their services. These states are: California, Colorado, Connecticut, Maine, Minnesota, Missouri, Nevada, New Mexico, Oregon and Washington. Other states should adopt this approach, which appropriately recognizes the experience, education and expertise of dental hygienists and fosters increased access to much needed Medicaid oral health services.

Today, 25 states (AZ, CA, CO, CT, HI, ID, IL, KS, KY, ME, MD, MT, MN, NV, NH, NM, ND, OK, OR, PA, SC, TX, UT, WA, and WI) allow dental hygienists to work in nursing homes. Further, 12 states (AZ, CA, CO, FL, KS, MN, NM, NV, OK, OR, TX, and WI) allow dental hygienists to visit homebound patients. ADHA encourages policymakers to recognize and encourage these innovations, which improve access to oral health care services and work to reduce the tremendous disparities in oral health in America.

Voices within the dental community also urge better utilization of dental hygienists. The March 2003 report “Improving the Oral Health Status of All Americans: Roles and Responsibilities of Academic Dental Institutions put forth by the American Dental Education Association President’s Commission called for improving the effectiveness of allied dental professionals, such as dental hygienists, in reaching underserved Americans.

Workforce experts have recognized that dental hygienists can and must play an increasing role if the nation’s oral health care needs are to be met. Indeed, a recent article (attached) in *Health Affairs* explored the oral health workforce and found:

“abundant evidence that a sizable segment of the population does not have access” to private [dental] care, while the dental safety net is “poorly defined and underdeveloped.” Dentists’ participation in Medicaid is not robust; community health centers and public health facilities have scant dental capabilities; and Medicare offers no dental coverage. “Radical steps” will be needed to correct “a growing disconnect between the dominant pattern of practice...and the oral health needs of the nation,”...including new practice settings for dental care, integration of oral and primary health care, and expanded scope of practice for hygienists and other allied professions.³

On November 20, 2002, the National Governors Association Center for Best Practices published an issue brief detailing “State Efforts to Improve Children’s Oral Health.” While the brief focuses on children’s oral health, the recommendations work across the age spectrum. The NGA Center for Best Practices recommends: “Maximizing auxiliary personnel can increase access to preventive services.... In most states, the scope of practice for auxiliary personnel is quite restricted, even when the services necessary don’t require a dentist. Some states are restructuring their Dental Practice Acts to maximize the use of dental hygienists....” Two illustrative examples highlighted by the NGA are set forth below.

- **Maine** changed the rules governing the practice of hygienists to allow them to practice in public health settings such as school health centers, hospitals, and public clinics without a dentist on site – provided that the hygienists have an established relationship with a dentist. The state believes this strategy offers great promise for addressing dentist shortages.
- **Minnesota** passed legislation in 2001 to allow dental hygienists to perform certain primary care functions without dentist supervision, provided they are employed by one of the following entities: hospitals, nursing homes, group homes, home health agencies, state-operated facilities, federal, state or local public health facilities, or community or tribal clinics. In order to qualify, the hygienist must meet prescribed practice experience requirements and must

³ Mertz, E. and O’Neil, E., “The Growing Challenge of Providing Oral Health Care Services To All Americans,” *Health Affairs*, Volume 21, Number 5 September/October 2002, p.65.

engage in a collaborative agreement with a dentist who authorizes and accepts responsibility for these hygienist services.⁴

ADHA urges Members of Congress to work toward shaping a future in which oral health services will be readily available to seniors and other Americans who need them. Facilitating better utilization of dental hygienists is a vital part of this future.

Education, Experience and Licensure Qualifies Dental Hygienists to Play an Increasing Role in Meeting the Oral Health Needs of the Elderly

As prevention specialists, dental hygienists understand that recognizing the connection between oral health and total health can prevent disease, treat problems while they are still manageable and conserve critical health care dollars. Dental hygienists are committed to improving the nation's oral health, an integral part of total health. Indeed, an increasing number of Americans could enjoy good oral health because the principal oral maladies (caries, gingivitis and periodontitis) are fully preventable with the provision of regular preventive oral health services such as those provided by dental hygienists.

A registered dental hygienist has graduated from a minimum two-year college program that includes classroom studies and extensive supervised clinical experience. A dental hygienist also must pass a national written exam and a comprehensive state clinical exam to earn the RDH (registered dental hygienist) license. In addition, 48 states require continuing education for licensure renewal.

The Commission on Dental Accreditation of the American Dental Association sets forth accreditation standards for dental hygiene education programs. These standards require dental hygiene graduates to be competent in caring for seniors. Accreditation Standard 2-18 specifically requires that graduates of accredited dental hygiene education programs must be competent in providing dental hygiene care for the child, adolescent, adult, **geriatric** and medically compromised patient (emphasis added). Accreditation Standard 2-21 further requires that "graduates must be competent in interpersonal and communication skills to effectively interact with **diverse** population groups" (emphasis added).

Regrettably, the experience, education and expertise of dental hygienists are now dramatically underutilized. ADHA wants to be part of the solution to the current problems of oral health disparities and inadequate access to oral health services for many Americans, including many seniors particularly those who are low-income, lack oral health insurance and/or reside in long-term care facilities. ADHA believes that increased utilization of dental hygienists is an important part of the solution to the nation's oral health crisis.

⁴ National Governors Association Center for Best Practices, Issue Brief, "State Efforts to Improve Children's Oral Health," November 20, 2002, p.6.

Workforce Issues

As the General Accounting Office (GAO) confirmed in two separate reports to Congress, “dental disease is a chronic problem among many low-income and vulnerable populations.” The GAO further found that the major factor contributing to the low use of dental services among low-income persons who have coverage for dental services is “finding dentists to treat them.”

Increased utilization of dental hygienists in non-traditional settings such as long-term care facilities and medical clinics would promote increased use of dental services among the elderly. These dental hygienists can serve as a pipeline that can refer patients to dentists. Increased utilization of dental hygiene services is critical to addressing the nation’s crisis in access to oral health care for vulnerable populations, such as our nation’s elderly.

Since 1990, the number of dentists per 100,000 U.S. population has continued to decline. This decline is predicted to continue so that by the year 2020 the number of dentists per 100,000 U.S. population will fall to 52.7. By contrast, since 1990, the number of dental hygiene programs has increased by 27% and, from 1985-1995, the number of dental hygiene graduates increased by 20%, while the number of dentist graduates declined by 23%.

Some states have begun to examine dental workforce issues. The WWAMI Center for Health Workforce Studies at the University of Washington assessed the patterns and consequences of the distribution of the dental workforce in Washington state. This November 2000 study revealed that Washington state “does not have a dental workforce sufficient to meet Healthy People 2010 goals.” The study found that “gaps in the state dental workforce will be difficult to fill with dentists because the nationwide per capita supply of dentists is decreasing; specialization is increasing, and programs to encourage dentists to practice in underserved areas are limited.” The study recommended that “policymakers should consider expanding the role of hygienists...to deliver some oral health services in shortage areas.” In Washington state, policymakers have enacted a school sealant program for underserved populations where dental hygienists provide the services without any requirement for authorization from a dentist.

ADHA urges that the Committee work to facilitate increased utilization of the experience, education and expertise of dental hygienists.

Lack of Oral Health Insurance

The failure to integrate oral health effectively into overall health is seen in the distinction between oral health insurance and medical insurance. While 43 million Americans lack medical insurance, a whopping 108 million -- or 45% of all Americans -- lack oral health insurance coverage. Studies show that those without dental insurance are less likely to see an oral health care provider than those with insurance. Moreover, the uninsured

tend to visit an oral health care provider only when they have a problem and are less likely to have a regular provider, to use preventive care or to have all their dental needs met. State Medicaid programs provide limited adult dental services and Medicare provides virtually no dental services. Indeed, Medicare does not cover any routine oral health services and allows only a narrow exception for coverage of certain dental services necessary to the provision of Medicare covered medical services such as extraction of teeth prior to radiation treatment of the jaw.

Even those who have dental insurance coverage, particularly Medicaid beneficiaries, are not assured of access to care. One way to promote this goal is to facilitate state recognition of dental hygienists as Medicaid providers of oral health services. Indeed, states are increasingly recognizing dental hygienists as Medicaid providers and providing direct reimbursement for their services.

ADHA urges this Committee and all Members of Congress to work to strengthen and enhance Medicaid and SCHIP dental benefits and to provide both medically necessary and routine oral health services under Medicare. ADHA looks forward to a future in which all Americans have dental health insurance coverage.

Supporting the Work of Entities Within the U.S. Department of Health and Human Services

The federal oral health infrastructure must be strengthened. Oral health must be fully integrated into overall health. ADHA urges this Committee to actively promote oral health programs within the Department of Health and Human Services (HHS). ADHA is very pleased with the appointment of Dr. A. Conan Davis as the Chief Dental Officer at the Centers for Medicare and Medicaid Services (CMS). ADHA is hopeful that this position is now a permanent one. In addition, ADHA urges that this Committee work to encourage each state to name a Dental Director.

ADHA further encourages this Committee to buttress the important oral health work of the Oral Health Division of the Centers for Disease Control and Prevention, the Maternal and Child Health Bureau and the Oral Health Initiative of the Health Resources and Services Administration (HRSA).

An increased federal focus on oral health will yield positive results for the nation. To illustrate, the work of the National Institute on Dental and Craniofacial Research (NIDCR) in dental research has not only resulted in better oral health for the nation, it has also helped curb increases in oral health care costs. Americans save nearly \$4 billion annually in dental bills because of advances in dental research and an increased emphasis on preventive oral health care, such as the widespread use of fluoride.

Improving the Nation's "Oral Health IQ"

This U.S. Senate forum today is a critically important step forward in the effort to change perceptions regarding oral health and oral disease so that oral health becomes an accepted component of general health. Indeed, the perceptions of the public, policymakers and health providers must be changed in order to ensure acceptance of oral health as an integral component of general health. ADHA urges members of the Senate Special Committee on Aging to work to educate their colleagues in Congress with respect to the importance of oral health to total health and general well-being. This hearing is an important signal to the public that oral health is important. ADHA hopes that further signals will be forthcoming.

The national oral health consciousness will not change overnight, but working together we can heighten the nation's "oral health IQ." ADHA is already working hard to change perceptions so that oral health is rightly recognized as a vital component of overall health and general well being. For example, ADHA has launched a public relations campaign to highlight the link between oral health and overall health. Our slogan is "Want Some Lifesaving Advice? Ask Your Dental Hygienist."

This ADHA campaign builds on the Surgeon General's report, which notes that signs and symptoms of many potentially life-threatening diseases appear first in the mouth, precisely when they are most treatable. Dental hygienists routinely look for such signs and symptoms. For example, most dental hygienists conduct a screening for oral cancer at every visit and can advise patients of suspicious conditions.

Conclusion

In closing, the American Dental Hygienists' Association appreciates this opportunity to participate in the Senate Special Committee on Aging's Forum on "Ageism in Health Care: Are Our Nation's Seniors Receiving Proper Oral Health Care." ADHA looks forward to a future in which the education, experience and expertise of dental hygienists are appropriately recognized and utilized; this will increase seniors' access to oral health services and work to ameliorate oral health disparities. ADHA is committed to working with lawmakers, educators, researchers, policymakers, the public and dental and non-dental groups to improve the nation's oral health which, as *Oral Health in America: A Report of the Surgeon General* so rightly recognizes, is a vital part of overall health and well-being.

Thank you for this opportunity to submit the views of the American Dental Hygienists' Association. Please do not hesitate to contact ADHA Washington Counsel, Karen Sealander of McDermott, Will & Emery (202/756-8024), with questions or for further information.

Attachment: Article from September-October 2002 edition of *Health Affairs* entitled "The Growing Challenge of Providing Oral Health Care Services to All Americans; the current practice model of dentistry, which serves

insured patients and those who can pay out of pocket, must be changed to include the rest of the population.”

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Attachment to ADHA Testimony:

Health Affairs

September 2002 - October, 2002

Title: The Growing Challenge Of Providing ^{Oral} Health Care Services To All Americans; The current practice model of dentistry, which serves insured patients and those who can pay out of pocket, must be changed to include the rest of the population.

Author: Elizabeth Mertz and Edward O'Neil

Frustrations over the difficulty of improving health care in the United States often reflect a sense that the system's overwhelming complexity is our worst enemy. In the following overview of the state of the nation's oral health, it is apparent that even in a relatively simple subdomain of the health enterprise, our cherished preference for harnessing private institutions to the pursuit of public goals brings success only at the price of endless tensions and trade-offs.

Elizabeth Mertz and Edward O'Neil find that better preventive care and patient habits have helped improve oral health "for many parts of the population." At the same time, the number of dental hygienists in the workforce has grown steadily and is expected to increase by 37 percent between 2000 and 2010. But the U.S. dentist-to-population ratio declined during the 1990s, and the amount of time that dentists spend with patients every week has also been declining"partly a result of the increasing use of hygienists.

This apparent signal of market equilibrium is misleading. The authors find "abundant evidence that a sizable segment of the population does not have access" to private care, while the dental safety net is "poorly defined and underdeveloped." Dentists' participation in Medicaid is not robust; community health centers and public health facilities have scant dental capabilities; and Medicare offers no dental coverage. "Radical steps" will be needed to correct "a growing disconnect between the dominant pattern of practice⁸and the oral health needs of the nation," the authors write, including new practice settings for dental care, integration of oral and primary health care, and expanded scope of practice for hygienists and other allied professions.

Mertz is project director at the Center for the Health Professions, University of California, San Francisco (UCSF), and has written and lectured extensively on oral health and workforce issues. She received her master's degree in public affairs from the University of Minnesota. O'Neil is director of the center and a professor of dentistry and public health at UCSF. He is a national authority on workforce issues and holds a doctorate in American studies from Syracuse University.

By many measures, the practice of dentistry has improved for the dentist over the past decade. Hours of work are down, and compensation is increasing. However, there is a growing disconnect between the dominant pattern of practice of the profession and the

oral health needs of the nation. To address these needs, the profession will need to take some radical steps toward redefinition, or the responsibility for many of these needs and special populations may shift to other providers and other institutions.

Dental disease has been widespread, recognizing few barriers of class, ethnicity, or economic status. By the middle of the twentieth century the acute manifestations of caries and advanced periodontitis left large numbers of persons with no options except extensive removal of teeth, restoration of the remaining teeth, and either fixed or removable prostheses. As the profession emerged from the Second World War, it was equipped with the skills for extracting teeth and manufacturing a vast array of mechanical structures fabricated from a variety of materials.

The 1950s witnessed the rise of a much more focused approach to science in all of health care. Through this movement the profession began to understand the systemic causes of infection and disease, which led to more scientific evaluation of existing treatments and new evidence-based approaches to prevention and therapy. Key among the preventive developments was the recognition of the efficacy of fluoride in preventing the onset of disease and the application of fluoride through water supplies as a population health strategy. Also contributing to prevention was the widespread information sharing among dentists, dental hygienists, and educators about the causes of infection and the corresponding change in patterns of self-care and treatment in large parts of the population. New restorative techniques, coupled with the middle-class cultural expectation of the annual dental check-up and the disposable income to pay for these preventive and therapeutic services, led to improved oral health for many parts of the population. [n1]

Although these improvements in oral health are a great success story for the dental profession, science, and the public, patterns of current and incipient oral disease and disability lie outside much of the traditional focus of practice and policy. Emerging concerns for the nation's oral health include access to care for low-income and underserved minority groups, oral diseases related to tobacco use, chronic facial pain, craniofacial birth defects and trauma, and the emergent health needs of an aging population that will need services in new locations and in new forms. [n2] To assess how these epidemiological, social, and economic challenges will confront dentistry, we begin with an assessment of the current dental professional workforce and contrast it, where possible, to the physician workforce.

The Oral Health Care Workforce

There are approximately 150,000 clinically active dentists in the United States. [n3] The number of dentists has been increasing for the past twenty years, but the growth has leveled off in comparison with the growth in the U.S. population, resulting in a decreasing dentist-to-population ratio (Exhibit 1).

Dentist-to-population ratio. From 1950 to 1970 the dentist-to-population ratio hovered at 50 per 100,000. [n4] With increasing demand for dental services and growing state and federal

investment in education, there was a sharp rise in the ratio through 1990 when it peaked at close to 60 dentists per 100,000 population. In the late 1970s and 1980s there was a growing perception of oversupply in practitioners by many dental professionals, in both practice and education. [n5] Partly in response to this, applications to dental schools declined sharply during the period. A number of schools closed during this period, and others reduced class sizes. The size of the entering dental class reached an all-time high in 1978 at 6,301, but by 1989 it had fallen by just over a third to 3,979. [n6] This dramatic decline had an almost immediate impact, as dentist-to-population ratios began to fall in the decade of the 1990s. By 2020 this ratio is projected to drop back to 52.7, which translates into one dentist for every 1,898 people. [n7]

In contrast, the physician-to-population ratio has been increasing for the past forty years and now stands at 286 per 100,000, about one physician for every 349 people. [n8] Between 1960 and 1998 the physician population grew by 198.6 percent, while the total population increased only 56.3 percent. Both the physician and dentist ratios vary greatly by region and state.

Age and sex distribution. The dentist workforce is aging, and a good portion will reach retirement age in the next decade. As shown in Exhibit 2, there are fewer young dentists in practice and fewer dentists working past age sixty-five in comparison to physicians. Just 12.5 percent (19,089) of dentists and 38 percent (4,300) of the entering dental students were women in 1996. [n9] In the same year, women were 21 percent (157,387) of the physician population, 35 percent (34,100) of residents/ fellows, and close to 43 percent (6,918) of the entering medical school class. [n10]

Racial/ethnic composition. The racial/ethnic distribution of the dentist workforce is among the least diverse of health professions. Approximately 13 percent of dentists are nonwhite, compared with 22 percent of physicians and 29 percent of the population (Exhibit 3). [n11] Blacks, Hispanics, and Native Americans are generally considered to be underrepresented minorities in the health professions. Dentistry contains 6.8 percent underrepresented minorities, compared with 8.5 percent of physicians and 24.8 percent of the population. [n12] First-year dental students in 1999 were 34 percent nonwhite; however, just 10.2 percent of this entering class were underrepresented minorities. [n13] In medicine, 36 percent of first-year students in 1998 were nonwhite, and 14 percent were underrepresented minorities. [n14]

Workforce size. The dentist workforce is much smaller than the physician workforce. It is growing at a slower rate in comparison to the population, and it tends to be more middle-aged (40-55), more male, and less ethnically diverse.

Practice Characteristics

The vast majority of dentists, more than 80 percent, are in general practice. The remainder are subspecialists, including orthodontists (5.8 percent), oral and maxillofacial surgeons (4.1 percent), periodontists (3.1 percent), pediatric dentists (2.4

percent), endodontists (2.2 percent), public health dentists (0.8 percent), and oral and maxillofacial pathologists (0.2 percent). [n15] This contrasts to the distribution in medicine, where approximately one-third practice the general medicine specialties of family medicine, internal medicine, or general pediatrics. [n16]

Hours worked per week. Private dental practitioners spent an average of 36.5 hours per week in their offices in 1998. Of these, an average of 33.3 hours were spent treating patients; this figure was 33.4 hours for generalists and 33.0 for specialists. [n17] By contrast, physicians in 1999 spent an average of 51.6 hours per week treating patients and an additional 4.7 in other professional activities. [n18]

Full time versus part time. The majority of dentists work full time; however, there has been a trend toward increased part-time work. The number of part-time dentists has increased at a greater rate than the number of full-time practitioners. In 1982 only 14.2 percent of dentists worked part time, compared with 23.8 percent in 1995. [n19] In conjunction with this trend, the average number of hours spent in the office for both full- and part-time practitioners has fallen, although the average number of hours spent treating patients has increased slightly. Therefore, although there has been an increase in overall numbers of dentists in the past few decades, the American Dental Association (ADA) found only "modest gains in the total number of office hours and the total number of treatment hours available to address the dental care needs of all Americans." [n20]

Solo versus group practice. Of all dentists in private practice in 1998, 66.3 percent were solo practitioners working in an incorporated or unincorporated practice. [n21] Generalist dentists (67.3 percent) were somewhat more likely to work in a solo practice than specialists were (61.5 percent). Women made up a larger percentage of non-solo practice dentists (13.9 percent) than solo practitioners (7.6 percent). [n22] An estimated 92 percent of dentists owned their own practices; 76.5 percent were sole proprietors. Most dentists worked in only one office (90.0 percent), while 3.2 percent worked in three or more offices. In contrast, in 1999 only a quarter (25.5 percent) of physicians in active practice were in solo self-employed practice. [n23]

Income. Independent dentists' median net income from all dental sources in 1998 was \$135,000-\$125,520 for general dentists and \$192,000 for specialists. [n24] The median net income, after expenses and before taxes, for physicians in 1998 was \$164,000; however, the medians across subspecialties ranged from \$120,000 for pediatrics to \$205,000 for orthopedic surgeons. [n25]

Patients' characteristics. Of patients in private dental practices in 1998, 21.5 percent were under age fourteen, 58.4 percent were ages fifteen to sixty-four, and 20.2 percent were age sixty-five or older. Almost 56 percent of patients were female. [n26] It is interesting to note the high percentage of patients older than age sixty-five, as this age category represents only 12.7 percent of the U.S. population. Given that Medicare does not cover dental care and that Medicaid dental benefits are not available in all states even for the elderly who have coverage, this may account for a large portion of out-of-pocket payments. [n27]

On average, 63.7 percent of patients were covered by private insurance in 1998, 5.7 percent were covered by public insurance, and 30.6 percent were uninsured. [n28] In 1998, \$53.8 billion in private funds was spent on dental services, nearly half of which took the form of out-of-pocket payments. [n29]

Summary of comparisons. Overall, the practice of dentistry has become a more lucrative and less time-consuming profession over the past decade. In comparison to physicians, dentists work more independently, have a higher rate of solo practice, and have greatly increased their earnings, in some cases surpassing the net income of physicians. Dentistry has remained a "cottage industry," which has fought incorporation into larger systems of managed care and capitated payments that have permeated medical groups.

The Allied Dental Health Workforce

Hygienists. Dental hygienists are licensed health care professionals who provide preventive, educational, and therapeutic services for the control of oral diseases and the promotion of oral health. All registered dental hygienists (RDHs) graduate from a minimum two-year college program that includes classroom studies and supervised clinical experience. Dental hygienists also must pass a national written exam and a state clinical exam to earn the RDH license. Most dental hygienists practice as independent contractors, and many work part time or for more than one practice. The Bureau of Labor Statistics (BLS) estimated that more than 90,000 hygienists practiced in the United States in 2000, with a mean salary of \$48,150. [n30]

Assistants. Dental assistants work chairside with the dentist, in the business office, and in the dental laboratory. Many states do not require formal training or licensure for dental assistants. However, there are many certified dental assistant training programs, mostly at the community college level, as well as expanded practice dental assistant certifications in many states. The BLS estimates that there were 175,160 dental assistants employed in the United States in 2000, with an average salary of \$24,130. [n31]

Laboratory technicians. Dental laboratory technicians are responsible for filling prescriptions from dentists for bridges, dentures, crowns, and other dental prosthetics. According to the BLS, dental technicians held about 43,000 jobs in 2000, mostly in small dental laboratories. The average salary for a dental technician was \$26,915. [n32] Formal training for this profession is available primarily through community and vocational programs; however, most dental technicians learn their trade "on the job." In 2000 there were thirty accredited programs in the United States, although in most states certification is not mandatory. [n33]

Job growth. The rate of growth in new jobs in health care occupations is projected to be 28.8 percent between 2000 and 2010. However, among the five health occupations with the lowest rate of growth are dentists (5.7 percent) and dental laboratory technicians

(6.3 percent). In contrast, the number of hygienist jobs will grow by 37.1 percent. [n34]

Approximately 62 percent of solo dentists employed at least one part-time or full-time dental hygienist in 1998, compared with 54 percent in 1986. [n35] Dentists in nonsolo practice tended to employ more hygienists; only 16 percent employed no hygienist. Also, 93.4 percent of all solo general practice dentists employed at least one dental assistant. All nonsolo practices had at least one dental assistant, and more than half employed three or more. [n36]

The projected growth in hygiene positions may indicate a trend for dentists to use more auxiliary staff for preventive and basic restorative care so they can concentrate on more specialized, highly reimbursable procedures. However, although the use of auxiliary staff has increased, these workers are more likely to be employed in group settings or practices, which are still relatively uncommon in dentistry. An increasing number of states are exploring expanded practice rights for dental hygienists, usually for the purpose of providing preventive care for underserved populations. This is allowable by law in only a few states, and independent hygiene practice is still relatively rare.

Dental Services In the Public Health Sector

There is abundant evidence that a sizable segment of the population does not have access to dental care through the traditional private practice model. [n37] Yet there is a poorly defined and underdeveloped dental "safety net." The result is that a growing number of people, many of them children, are unable to get regular dental care through the dental public health system or any other way.

The Health Resources and Services Administration (HRSA) estimates that in 1998 there were only 2,032 public health dental workers employed in federal or state agencies. [n38] These workers are responsible for planning, developing, implementing, and evaluating programs to promote and maintain the oral health of the public. Functioning at the federal, state, and local levels, these public health workers are defined officially only by their training in dentistry or dental health. Additional public health staff may work on dental public health issues but under a different official title. The release of Healthy People 2010 and the surgeon general's report on oral health, which discussed the disparate burden of oral disease on the underserved, stimulated more interest in public health dental programs. However, to staff these programs with professionals willing to work in the public sector with underserved populations is an ongoing challenge. [n39]

There are relatively few public health dentists in the United States. Just 0.8 percent of professionally active dentists in 1998 were public health specialists, approximately 1,207 dentists. [n40] In addition, approximately 400 dentists (in 2002) work for the Indian Health Service, and 258 are serving in the National Health Service Corps. [n41] While some dentists volunteer their time to help the underserved, the lack of dentists participating in Medicaid continues to be a major access barrier for many low-income populations. [n42] Community health centers (CHCs), serving 8.6 million people, including 2.8 million Medicaid beneficiaries, were only able to provide 1.2 million

patients with preventive and basic dental care in 1998, less than 13 percent of the total clientele. [n43] Dentists actively fought any Medicare dental benefit when the program was created in the late 1960s. Unless this lack of coverage changes, baby boomers soon reaching retirement age will be faced with no systematic way to finance their dental care.

RDHs, with their occupational growth and focus on preventive care, may be the oral health professionals best poised to address issues of access. However, RDHs are restricted in most states from practicing without a dentist's supervision. The growing shortage of dentists in many areas limits hygienists' ability to provide preventive care where it is needed most. The low priority of dental public health within public funding mechanisms has also restricted full-scale prevention activities in schools and health care facilities. While many benefit from fluoridated water, only those who can afford regular dental care receive the benefits of regular, comprehensive preventive care.

Current Crisis Of Care

The recent surgeon general's report cataloged the advances that have been made in the technology and science of oral health care but also clearly showed that there are worsening disparities in the oral health status for certain population groups. Underserved groups include people who are low-income or indigent; live in rural communities; are racial or ethnic minorities, non-English speaking, children, or elderly; and are developmentally disabled or have major medical problems. [n44] Each of these populations faces sizable barriers to care, and all are at a notable disadvantage with poorer health outcomes. Socioeconomic status tends to be the most important indicator for use of services and health outcomes, regardless of race and gender, while people with dental insurance have a higher likelihood of visiting a dentist than do those without. [n45]

In no small measure, this is attributable to the current practice model of dentistry, which is structured to serve insured patients or patients who have the disposable income to pay for services out of pocket, in areas served by dental providers. Moreover, dental education trains new providers within the current practice model, leaving little room for developing a different type of practitioner that might appropriately address unmet needs. There is limited public financing for oral health care services outside of private dental offices. The dental safety net is small compared with the medical safety net, and many safety-net providers are underfinanced, understaffed, and overburdened. [n46]

Practitioners operating in the traditional delivery service model are able to sustain and increase income while working shorter hours, so they have little financial incentive to modify their practice. This lack of incentive, the limited supply of dentists, and the lack of alternatives for delivery and financing of care mean that much of the population with the greatest and fastest-growing set of needs will continue to be underserved by the traditional system of private practice, fee-for-service dentistry.

Alternatives To Current Practice

A system of dental care that will begin to address the unmet health needs of a growing part of the population will likely need to move beyond the existing system of finance, practice organization, and professional utilization. [n47] The standard response to the lack of dental services is to suggest increasing the number of dentists. Some increase may be warranted, and perhaps inevitable, but it may be more useful to understand this problem less as a problem of supply of practitioners and more as a poor fit between part of the current practice model, the patterns of disease, and the people needing care. Such a change will raise several critical questions, such as the following: Where do those who have the greatest oral health needs receive other health care? What physical and financial impediments could be removed to facilitate meeting current and future demand? Are there social service or employment settings that might effectively sponsor oral health services? What motivations might bring the underserved more seamlessly into a system of care? How can expectations regarding oral health be raised within the under-served population?

Alternative organizational structures. A variety of strategies have been explored to provide some level of improved access to dental care for underserved populations. [n48] On the supply side, public dental clinics, whether freestanding or integrated into larger medical clinics, represent the closest alternative to private practice. Dental vans and mobile dental services have become a popular solution for delivering services to rural communities or schools. Increasingly, school-based or -linked services organize care at easily accessible sites and emphasize preventive care and screening. Teledentistry enables dentists in remote clinics to communicate with specialists in urban centers, to provide better diagnosis and referral. [n49]

Increased education about programs. Alternative organizational structures of dental services are only a part of the equation. Many communities have historically underused dental services. To increase participation in oral health care, focused population-targeted programs concentrate their efforts on increasing education and awareness about services within specific population groups. Some programs go further, providing case management for their clients to ensure proper screening, treatment, and follow-up. [n50] Policy responses to increasing the supply of and demand for dental services must move beyond funding the traditional models of Medicaid coverage and provider incentives to take more charity cases. A sound policy response would vastly expand the dental public health infrastructure to creatively bring those with unmet need into a system of care.

Integrating oral and primary health care. Another model of care focuses on the reintegration of oral health care into primary health care. This concept is being explored in both the dental and medical communities. [n51] One of the keys to improving access to care is making dental services visible, affordable, and convenient for underserved populations. Primary care medicine has more routine contact with these populations, providing opportunities for preliminary dental screening and education as well as integration of clinical services.

Any strategy to address the barriers to care will need to be a collaborative effort across health care providers, as no single profession can tackle the issue alone. [n52] For

example, the monitoring of oral health could be incorporated into a chronic care model and be offered in systemic primary care carried out by family physicians. [n53] This would be beneficial to Medicare recipients who have no dental coverage. Addition of a dental benefit to Medicare is unlikely in the current fiscal environment, and to date alternative public mechanisms to finance dental care for the elderly are not in sight. Although access to care for underserved populations is on the policy screen, the important issues associated with dental care for the elderly have yet to catch policymakers' attention.

Multidisciplinary approach. The public health system has not been competitive in attracting dentists, so the use of a variety of health professionals and social workers should be considered. Multidisciplinary efforts may better reach under-served populations by combining administrative efforts and public health goals.

Expanded practice for hygienists and assistants. Expanded practice for dental hygienists and assistants is another option being explored as a way to increase access to preventive services and education. [n54] Pilot studies have shown the expanded practice models to be safe and effective, and these practices have been successful in reaching underserved populations. [n55] Regulatory change around scopes of practice is a slow process, and few states have implemented major changes. Expanding the roles of allied oral health practitioners could increase the contact points for oral health information and care for numerous populations.

New dental school strategies. It is unlikely that the current dental workforce will be adequate to meet the oral health needs of our communities; therefore, the pipeline for providers is an important issue that must be addressed. [n56] Dental schools could recruit and support more students from underserved backgrounds, who have been shown to be more likely to work in underserved communities. [n57] Education programs also should encourage all oral health providers to serve under-served communities throughout their professional careers. Similarly, an expansion of dental hygiene and dental assisting education may increase the raw supply of these practitioners, but only if this effort is combined with regulatory change that ensures full use of their skills.

Program evaluation. While experimental interventions to increase demand and alter the structure and financing of care hold promise, evidence of effectiveness is still nascent. For the most part, safety-net programs focus on meeting the enormous volume of demand for services rather than dissipating resources to evaluation. A focused effort on program evaluation, with concentration on cost-effectiveness and patient outcomes, is an important final step for alternative models to gain legitimacy and support. Alternative programs remain a small fraction of all dental services.

Meeting the challenges of reducing disparities in oral health care will require fundamental redefinitions of how dental practice is organized, financed, and provided. In the long run, it would seem that systems of oral health care must be either directly

integrated into larger systems of care or more effectively articulated with them. Financing of care must be realigned to pay for proven and effective interventions. Finally, the education of dental professionals must focus on community health and well-being, in addition to individual treatment and private practice.

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